Name: _____ Class: _____ Date: _____ ID: A

Geometry Chapter 5 Practice Test

A

1 K is between J and L. $JK = 3x - 5$, and $KL = 2x + 1$. If $JL = 16$, what is JK?

A. 7
B. 8
C. 9
D. 13

$JK = 3x - 5 = 3(4) - 5 = 12 - 5 = 7$

$1 \longrightarrow 16 \longrightarrow 1$

$3x-5 \quad 2x+1$

J K L

$3x - 5 + 2x + 1 = 16$
$5x - 4 = 16$
$5x = 20$
$x = 4$

B

2 What is the area of a circle whose diameter is 3 centimeters?

A. 1.5π cm^2
B. 2.25π cm^2
C. 6π cm^2
D. 36π cm^2

$d = 3$
$r = 1.5$

$A = \pi r^2$
$A = \pi (1.5)^2$
$A = 2.25\pi$

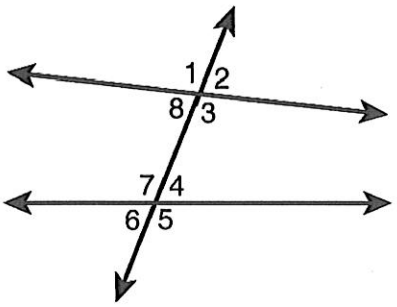
B

3 Complete the statement.
Two lines are parallel if the same-side interior angles are _____ angles.

A. complementary
B. supplementary
C. congruent
D. corresponding

D

4 Which angles are alternate interior angles?



A. $\angle 1$ and $\angle 4$
B. $\angle 1$ and $\angle 5$
C. $\angle 3$ and $\angle 4$
D. $\angle 3$ and $\angle 7$

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B

5 What is the slope of the line perpendicular to $y=-\frac{3}{2}x+9$?

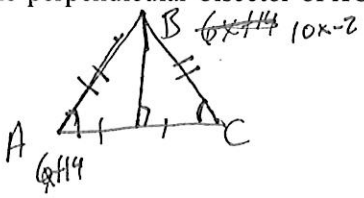
A. $\frac{3}{2}$

B. $\frac{2}{3}$

C. $-\frac{2}{3}$

D. $-\frac{3}{2}$

6 In ΔABC, B is on the perpendicular bisector of $\overline{AC}$, $m\angle A=(6x+14)°$, and $m\angle ABC=(10x-2)°$. Find $m\angle C$.



$2(6x+14)+10x-2=180$

$12x+28+10x-2=180$

$22x+26=180$

$22x=154$

$x=7$

$6(7)+14$

$42+14=56°$

7 Write an equation in point-slope form for the perpendicular bisector of the segment with endpoints $(2,4)$ and $(6,2)$.

$\frac{2-4}{6-2}=\frac{-2}{4}=-\frac{1}{2}$

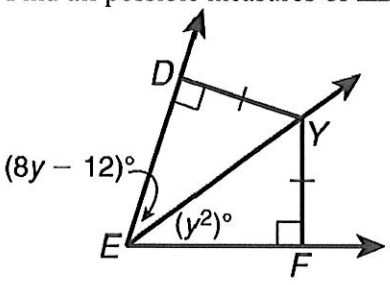
slope of $\perp=2$

Midpt: $\left(\frac{2+6}{2},\frac{4+2}{2}\right)$

$\left(\frac{8}{2},\frac{6}{2}\right)=(4,3)$

$y-3=2(x-4)$

8 Find all possible measures of $\angle DEF$.



$y^2=8y-12$

$y^2-8y+12=0$

$(y-6)(y-2)=0$

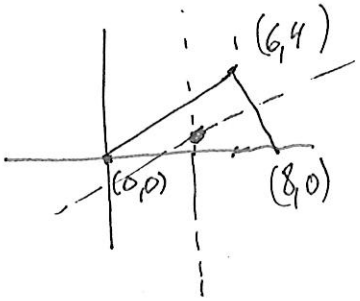
$y=6$ or $y=2$

$m\angle DEF=y^2+8y-12$

$y=6: 6^2+8(6)-12=72°$

$y=2: 2^2+8(2)-12=8°$

9 Find the center of the circle circumscribed about the triangle with vertices $(0,0)$, $(8,0)$, and $(6,4)$.



$(4, 2)$

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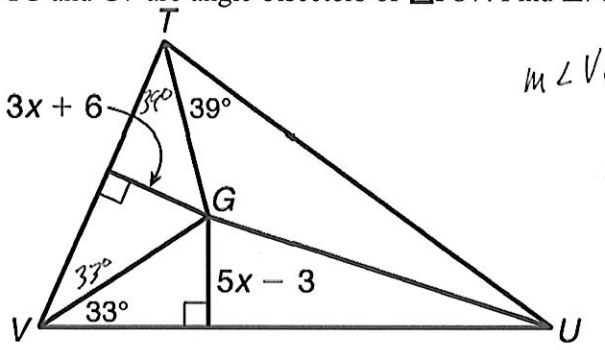
10 $\overline{TG}$ and $\overline{GV}$ are angle bisectors of ΔTUV. Find $\angle VGT$ and the distance from G to $\overline{UV}$.



$m\angle VGT = 180 - (39+33) = \boxed{108^\circ}$

$3x+6 = 5x-3$ $\quad 3(4.5)+6$

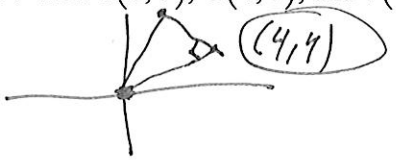
$9 = 2x$ $\quad \boxed{19.5}$

$x = 4.5$

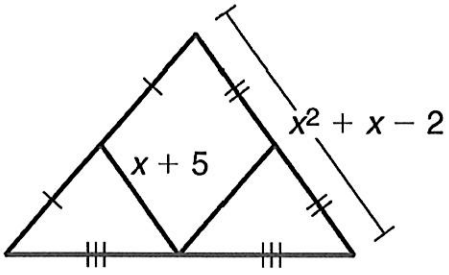
11 Find the coordinates of the centroid of the triangle with vertices at $(-4,2)$, $(1,2)$, and $(6,3)$

$\left(\frac{-4+1+6}{3}, \frac{2+2+3}{3}\right) = (1, 2\frac{1}{3})$

12 Find the coordinates of the orthocenter of ΔTUV with $T(0,0)$, $U(4,4)$, and $V(1,7)$



13 Find the value of x.



$2x+10 = x^2+x-2$

$0 = x^2 - x - 12$

$0 = (x-4)(x+3)$

$x = 4$ or $x = -3$

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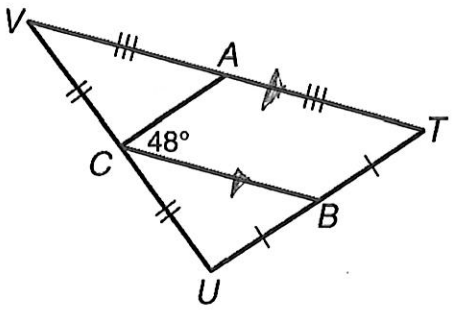
14 What is m∠*TAC*?



180-48 = 132°

15 Use indirect reasoning to explain why an obtuse triangle cannot have a right angle.

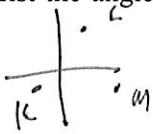
Assume an obtuse Δ can have a right angle. Suppose ΔABC has right ∠B since m∠A > 90° & m∠B = 90° and since m∠C > 0° it follows that m∠A + m∠B + m∠C > 180° A contradiction to the Δ sum theorem. The assumption is wrong. An obtuse Δ cannot have a right angle.

16 The lengths of two sides of a triangle are 7 and 12. Find the range of possible lengths for the third side.

(12 - 7)
(12 + 7)

Between 5 & 19

17 List the angles of Δ*KLM* with vertices $K(-2,-2)$, $L(2,6)$, $M(7,-2)$ in order from smallest to largest.



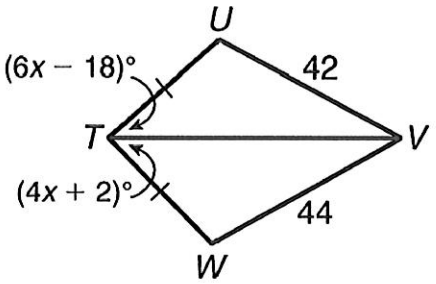
$KL = \sqrt{(4)^2 + 8^2} = \sqrt{80} \approx 8.94$

$KM = \sqrt{9^2 + 0^2} = 9$

$LM = \sqrt{5^2 + (-8)^2} = \sqrt{89} \approx 9.43$

∠M, ∠L, ∠K

18 Find the range of values for x.



$6x - 18 < 4x + 2$

$2x < 20$

$x < 20$

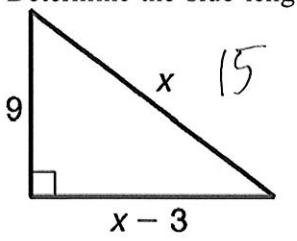
$6x - 18 > 0$

$6x > 18$

$x > 3$

$3 < x < 20$

19 Determine the side lengths of the triangle.



15

12

$x^2 = 9^2 + (x-3)^2$

$x^2 = 81 + x^2 - 6x + 9$

$6x = 90$

$x = 15$

20 Write *True* or *False*. Multiplying each number of a Pythagorean triple by a nonzero whole number yields another Pythagorean triple.

21 The longest side of a triangle is 13 centimeters. Another side is 11 centimeters. If the triangle is obtuse, write an inequality for the range of values for the third side.

$13^2 > 11^2 + x^2$

$169 > 121 + x^2$

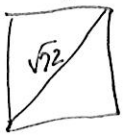
$48 > x^2$

$x < \sqrt{16}\cdot\sqrt{3}$

$x < 4\sqrt{3}$

$2 < x < 4\sqrt{3}$ cm

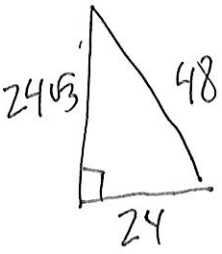
22 Determine the perimeter of a square with a diagonal of $\sqrt{72}$ centimeters.



$s = \frac{\sqrt{72}}{\sqrt{2}} = \sqrt{36} = 6$

$P = 4s = 4(6)$ 24 cm.

23 Find the area of a $30°-60°-90°$ triangle with hypotenuse length of 48 inches.



$A = \frac{1}{2}bh = \frac{1}{2}(24)(24)\sqrt{3} = 288\sqrt{3}$ in^2

(≈ 488) in^2